

Figure 3 is the amino acid sequence of the ω 3-desaturase (SDD17) (SEQ ID NO: 26) encoded by the nucleotide sequence depicted in Figure 2.

Figure 4 is an amino acid sequence comparison between the SDD17 desaturase (SEQ ID NO: 43) depicted in Figure 3 and a known Δ 15-desaturase from *Synechocystis* sp. (SYCDESB) (SEQ ID NO: 44).

Figure 5 is an amino acid sequence comparison between the SDD17 desaturase (SEQ ID NO: 45) depicted in Figure 3 and a known Δ 17-desaturase from *C. elegans* (CELEFAT) (SEQ ID NO: 46).

Figure 6 is the nucleotide sequence of *sdd12* (SEQ ID NO: 41), a gene derived from *S. diclina* (ATCC 56851) that encodes a novel Δ 12-fatty acid desaturase.

Figure 7 is the amino acid sequence of the Δ 12-desaturase (SDD12) (SEQ ID NO: 42) encoded by the nucleotide sequence depicted in Figure 6.

Figure 8 is an amino acid sequence comparison between the SDD12 desaturase (SEQ ID NO: 47) depicted in Figure 7 and a known Δ 12-desaturase from *G. hirsutum* (GHO6DES) (SEQ ID NO: 48).

Figure 9 lists the sequence identifiers used throughout the application as well as the corresponding amino acid or nucleotide sequence.

Please replace page 45, line 12 - page 46, line 30 with the following:

The following degenerate primers were designed and used in various combinations:

Protein Motif 1: NH₃- TRAAIPKHCWVK -COOH
(SEQ ID NO: 49)

Primer RO 1144 (Forward): 5'-ATC CGC GCC GCC ATC CCC
AAG CAC TGC TGG GTC AAG-3' (SEQ ID NO: 1).

Protein Motif 2: NH₃- ALFVLGHDCGHGSFS -COOH
(SEQ ID NO: 50)
This primer contains the histidine-box 1 (underlined).

Primer RO 1119 (Forward): 5'- GCC CTC TTC GTC CTC GGC
CAY GAC TGC GGC CAY GGC TCG TTC TCG-3' (SEQ. ID. NO:
2).

Primer RO 1118 (Reverse): 5'-GAG RTG GTA RTG GGG GAT
CTG GGG GAA GAR RTG RTG GRY GAC RTG-3' (SEQ. ID. NO:
3).

Protein Motif 3: NH₃- PYHGWRISHRTHHQN -COOH
(SEQ ID NO: 51)
This primer contains the histidine-box 2 (underlined).

Primer RO 1121 (Forward): 5'-CCC TAC CAY GGC TGG CGC
ATC TCG CAY CGC ACC CAY CAY CAG AAC-3' (SEQ. ID. NO:
4).

Primer RO 1122 (Reverse): 5'-GTT CTG RTG RTG GGT CCG
RTG CGA GAT GCG CCA GCC RTG GTA GGG-3' (SEQ. ID. NO:
5).

Protein Motif 4: NH₃- GSHF D/H P D/Y SDLFV -COOH
(SEQ ID NO: 52)
Primer RO 1146 (Forward): 5'- GGC TCG CAC TTC SAC CCC
KAC TCG GAC CTC TTC GTC-3' (SEQ. ID. NO: 6).
Primer RO 1147 (Reverse): 5'- GAC GAA GAG GTC CGA GTM
GGG GTW GAA GTG CGA GCC-3' (SEQ. ID. NO: 7).

Protein Motif 5: NH₃- WS Y/F L/V RGGLTT L/I DR -COOH

AZ
control

(SEQ ID NO: 53)

Primer RO 1148 (Reverse): 5'- GCG CTG GAK GGT GGT GAG
GCC GCC GCG GAW GSA CGA CCA-3' (SEQ. ID. NO: 8).

Protein Motif 6: NH₃- HHDIGTHHVIHHLFPQ -COOH

(SEQ ID NO: 54)

This sequence contains the third histidine-box
(underlined).

Primer RO 1114 (Reverse): 5'- CTG GGG GAA GAG RTG RTG
GAT GAC RTG GGT GCC GAT GTC RTG RTG-3' (SEQ. ID. NO:
9).

Protein Motif 7: NH₃- H L/F FP Q/K IPHYHL V/I EAT -COOH

(SEQ ID NO: 55)

Primer RO 1116 (Reverse): 5'- GGT GGC CTC GAY GAG RTG
GTA RTG GGG GAT CTK GGG GAA GAR RTG-3' (SEQ. ID. NO:
10).

Protein Motif 8: NH₃- HV A/I HH L/F FPQIPHYHL -COOH

(SEQ ID NO: 56)

This primer contains the third histidine-box
(underlined) and accounts for differences between the
plant omega-3 desaturases and the *C. elegans* omega-3-
desaturase.

Primer RO 1118 (Reverse): 5'-GAG RTG GTA RTG GGG GAT
CTG GGG GAA GAR RTG RTG GRY GAC RTG-3' (SEQ. ID. NO:
11).

The degeneracy code used for SEQ. ID. NOS: 1 through 11
was as follows: R= A/G; Y=C/T; M=A/C; K=G/T; W=A/T; S=C/G;
B=C/G/T; D=A/G/T; H=A/C/T; V=A/C/G; and N=A/C/G/T.

Please replace page 65, line 29 - page 66, line 21 with the following:

The degenerate primers used in this Example were as follows:

Protein Motif 1: NH₃- P N/E FTIKEIR D/E A/C IPAHC F - COOH (SEQ ID NO: 57)

Primer RO 967 (Forward): 5'-CCG SAG TTC ACS ATC AAG GAG ATC CGC GAS KSC ATC CCG GCC CAC TGC TTC -3' (SEQ. ID. NO: 30).

A3
Protein Motif 2: NH₃- MP H/F YHAE EAT V/Y H I/L KK A/L - COOH (SEQ ID NO: 58)

Primer RO 968 (Reverse): 5'-GRS CTT CTT GAK GTG GWM SGT GGC CTC CTC GGC GTG GTA GWR CGG CAT-3' (SEQ. ID. NO: 31).

Protein Motif 3: NH₃- P L/V YW A/I C/M/A QG V/I V L/G/C TGVW -COOH (SEQ ID NO: 59)

Primer RO 964 (Forward): 5'-CCS STC TAC TGG GCC TGC CAG GGT RTC GTC CTC ACS GGT GTC TGG-3' (SEQ. ID. NO: 32).

This sequence is more similar to the known plant Delta 12-desaturases.

Primer RO 965 (Forward): 5'-CCS STC TAC TGG ATC RYS CAG GGT RTC GTC KGY ACS GGT GTC TGG-3' (SEQ. ID. NO: 33).

This sequence is more similar to the known fungal Delta 12-desaturases.

Protein Motif 4: NH₃- HVAHH L/F FS T/Q MPHYHA -COOH (SEQ ID NO: 60)

Primer RO 966 (Reverse): 5'-GGC GTG GTA GTG CGG CAT SMM CGA GAA GAR GTG GTG GGC GAC GTG-3' (SEQ. ID. NO: 34).